

Reducing Gas Consumption in a Denim Finishing Manufacturer

Sustain⁸

CHALLENGES

The client operates one of Italy's largest denim washing and processing facilities and is a key manufacturing partner to luxury fashion brands. The site carries out complex, energy-intensive finishing processes including washing, drying, dyeing, colour removal, and advanced 3D effects across a wide range of denim and garment-dyed products.

Rising gas prices and growing sustainability expectations exposed the scale of energy spend embedded in thermal processes. Baseline consumption averaged 0.65 m³ of gas per item processed, and management recognised the opportunity to reduce this. Any change risked affecting throughput, quality, or delivery reliability—non-negotiables when supplying luxury brands. Leadership initially set a conservative target of 5% reduction, prioritising low risk and operational stability over ambitious transformation.

Like many manufacturers, energy costs had become unpredictable. High gas costs eroded margins and limited reinvestment, while engineering and production teams were already operating at full capacity.

OUR APPROACH

The team focused on a small number of high-leverage actions rather than broad programmes. Attention centred on three areas with the strongest influence on gas

Improving thermal efficiency in garment finishing

Client: Denim Washing and Process Facility

Industry: Denim Finishing Laundry / Manufacturing

RESULTS

● **10%**
gas use reduction per item produced

● **~€40,000**
cost saving per month
(≈ €480,000/year)

● **~109 tCO₂**
reduction per month (≈
1,308 tonnes/year)

● **2 MONTHS**
payback

consumption: boiler operation, drying processes, and production planning. A targeted boiler management action optimised day-to-day performance. In drying, a controlled experiment introduced partial air drying to reduce thermal demand without compromising finish quality. In parallel, planning was adjusted to maximise the reuse of condensed vapour, aligning batch sequencing with available residual heat. All changes were tested live in production, implemented incrementally, and monitored closely. The programme is still ongoing, with further optimisation opportunities already identified.

THE RESULTS

- **Key changes:**
 - Boiler management: one focused operational improvement to reduce unnecessary gas use
 - Drying: one practical experiment introducing air drying alongside thermal drying
 - Planning: one improvement to better capture and reuse condensed vapour
- **Gas consumption:** 10% reduction in gas consumption (double the 5% target)
- **Savings:** €40,000/month (~€480,000 annually)
- **CO₂ reduction:** ~55,000 m³ gas saved per month / ~109 tonnes CO₂/month (~1,308 tonnes CO₂/year)



UNLOCKING SUSTAINABILITY

- Start small and focused: A few well-chosen interventions can outperform broad initiatives.
- Thermal processes hide fast wins: Boilers, drying, and heat recovery often deliver the shortest payback.
- Planning matters: Aligning production flow with available heat can unlock savings without new equipment.